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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/052,534 | 01/23/2002 | Takayuki Toshima | 33082M115 | 3236 |
| 441 | 7590 | 10/08/2004 | | |
| SMITH, GAMBRELL & RUSSELL, LLP 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036 | | | EXAMINER KORNAKOV, MICHAEL | |
| | | | ART UNIT | PAPER NUMBER |

1746

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,534

Applicant(s)

TOSHIMA ET AL.

Examiner

Michael Komakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 20-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicants' election of claims 1-19, Group I in paper dated 07/30/2004 is acknowledged. The election is treated as made without traverse since the Applicants have not pointed out wherein either (1) the reasons advanced by the Examiner to establish distinctiveness between the inventions as claimed and grouped or (2) the evidence of separate status, classification and/or search are in error. Therefore the restriction requirement is made **FINAL**.

Specification

2. The abstract of the disclosure is objected to because it exceeds the required format. Applicants are reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1,3,6,8,9,10,14-18 are related to a substrate processing **apparatus** and at the same time introduce the processing steps, which makes the subject matter of the indicated claims indefinite. Thus, claim 1 recites "a processing liquid being fed...to process the undersurface"; claim 3 recites "a step of rotating the substrate"; claim 6 recites "the processing liquid is fed"; claims 8 and 9 recite "the processing liquid to be fed"; claim 10 recites "a layer of processing liquid being formed"; claim 14 recites "the substrate is processed with the processing liquid"; claim 15 recites "that the layer of the processing liquid and the puddle of the processing liquid are jointed together"; claim 16 recites "a layer of the processing fluid being also formed in the space.... and the substrate is processed with the processing liquid"; claim 17 recites "layers of the processing liquid formed on both the surfaces of the substrate are jointed together to

cover up the entire surface including an edge surface of the substrate with the processing liquid"; claim 18 recites "the processing liquid is fed to the space" and "the processing liquid is fed onto the upper surface". Appropriate correction is required.

Claims 2,4,5,7,11,12 are rejected because of their dependency and failure to remove the ambiguity of parent claims.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 10, 11, 13, 14, 15, 16, 17, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomita et al (U.S. 6,543,080).

With regard to claims 10 and 13 Tomita discloses semiconductor substrate cleaning apparatus wherein supply of the cleaning liquid can be performed to upper side of the substrate and lower side of the substrate (abstract), the apparatus comprises a holder (position 2 in Fig.1) that holds the substrate in horizontal position, chemical liquid supply nozzles 8a and 8b on Fig. 15 9a), which are regarded as upper and lower side members, or the upper and lower side members (ultrasonic vibrator) can be also seen on Fig. 1a. Ultrasonic vibrator can be placed in a distance from the substrate to apply

vibrations through the cleaning liquid (col.2, lines 45-47, 52-57). Thus the liquid is shown to have a feeding path between the lower surface of a substrate and an upper surface of a nozzle (Fig.15) or an ultrasonic vibrator (Fig.1a). The contact angle at which the cleaning liquid is supplied is varied, the angle can be both positive and negative and the high cleaning effect is achieved at the cleaning angle of (+) or (-) 60°. (col.8, lines 45-55). Thus, since the requirements of the liquid contact angle is fulfilled by Tomita, then the property of the wettability of the cleaning liquid is inherent. With regard to claim 11, the limitations of this claim do not add any structural limitation of the apparatus, and therefore, since the claimed and the prior art apparatus are substantially the same, the apparatus of Tomita is fully capable of holding the liquid that will impart hydrophobic properties to the substrate.

With regard to claims 14, 15 Tomita shows in FIG. 19, chemical liquid supply nozzles 8a and 8b are provide for the **obverse and reverse sides**, respectively, of the wafer 1 as previously discussed. . The wafer 1 is held by a wafer holder 21. In addition, a plurality of chuck pins 22 for determining the horizontal position of the wafer 1 are disposed to contact the peripheral edge of the wafer 1 through ultrasonic vibrators 23. The chuck pins 22 grip the wafer 1 at the same positions continuously during the cleaning process. A cylindrical **rotating member 24** is rotatably provided on a base portion of the chemical liquid supply nozzle 8b, which is provided at the reverse side of the wafer 1. A support member 25 is secured to the upper end of the rotating member 24 to support the wafer holder 21 (col. 14, lines 14-47, and Fig.19)

With regard to claim 16, since the apparatus is substantially the same as claimed it is fully capable of producing the layer of liquid as recited in claim 16. With regard to claim 17, see Fig. 12(a) and 15(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

10/6/2004